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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------|-------------|----------------------|---------------------|------------------|
| 10/721,184 | 11/26/2003 | Stephen H. Tang | INTEL-0044 | 6574 |
| 34610 | 7590 | 08/01/2005 | EXAMINER | |
| FLESHNER & KIM, LLP | | | HOANG, HUAN | |
| P.O. BOX 221200 | | | ART UNIT | |
| CHANTILLY, VA 20153 | | | PAPER NUMBER | |
| | | | 2827 | |

DATE MAILED: 08/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,184

Applicant(s)

TANG ET AL.

Examiner

Huan Hoang

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, 13, 15, 16, 18-20, 22-24 and 27-30 is/are rejected.
- 7) ☒ Claim(s) 14, 17, 21, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed on 05/24/05 has been received and entered.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-6, 8, 9, 12, 13, 15, 16, 18-20, 22-24, 27 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Forbes.

Forbes discloses an apparatus having all the elements as recited in claims 1-6, 8, 9, 12, 13, 15, 16, 18-20, 22-24, 27 and 28 as follows:

a transistor (401-1, Fig. 4B) to store data, wherein;

a gate (419-1) of the transistor is configured to receive a first signal;

a first channel interface (417) of the transistor is configured to receive a data signal;

a second channel interface (407) of the transistor is configured to receive a second control signal, the data being stored in the transistor by resetting a floating body

of the transistor and then writing the data to the floating body (paragraph [0014], lines 11-14);

wherein the dynamic random access memory device is a floating body dynamic random access memory device (paragraphs [0016] and [0017]);

wherein a word line is coupled to the gate of the transistor (paragraph [0038], lines 1-2);

wherein a bit line is coupled to the first channel interface of the transistor (paragraph [0034], lines 12-13);

Regarding to claims 12, 13, 15, 16 and 18, the voltages applied to the source and the gate of the floating body transistor are inherent to provide forward biasing the drain-body n-p junction diode to remove charge from the body (paragraph [0014], lines 11-14).

Regarding claims 19, 20, 22-24, the third voltage level, the fourth voltage level and the fifth voltage level are disclosed in paragraph [0037], lines 1-3 and paragraph [0036], lines 5-6).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forbes.

Forbes discloses all the elements of claim 7 except for the interchange of drain and source of the transistor. However, the drain and the source of the transistor are interchangeable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Forbes by interchanging the drain and the source of the transistor since the drain and source are interchangeable in the art.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forbes in view of Ohsawa (US-2004/0026749 cited in the last Office Action).

The only difference between claim 10 and Forbes is that the purge line is coupled to the second channel interface of the transistor. However, Ohsawa discloses the purge line is one of the lines for to transmit a control signal in the memory transistor (paragraph [0016]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a purge line to transmit a control signal in a memory cell.

6. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forbes in view of Gomes et al. (US-2004/0123037 cited in the last Office Action).

Claims 29 and 30 differ from Forbes in reciting an off-die component in communication with the processor. However, Gomes et al. discloses the use of an off-chip such as a cache memory for communicating with the processor (Fig. 6 and paragraph [0038]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Forbes by using an off-chip cache memory to communication with the processor.

Allowable Subject Matter

7. Claims 14, 17, 21, 25 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

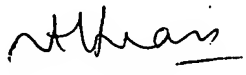
The prior art does not teach or suggest the specific ranges of the voltage levels as recited in the above claims.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huan Hoang whose telephone number is (571) 272-1779. The examiner can normally be reached on Mon-Fri 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoai Ho can be reached on (571) 272-1777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HH
7/28/05.


Huan Hoang
Primary Examiner
Art Unit 2827